

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/08645

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A23L1/212 A01H5/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A23L A01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, FSTA, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>ARAUJO DE M L ET AL: "INTRA AND INTERLOCUS INTERACTIONS BETWEEN ALCOBACA (ALC), CRIMSON (OGC), AND HIGH PIGMENT (HP) LOCI IN TOMATO LYCOPERSICON ESCULENTUM MILL" EUPHYTICA, KLUWER ACADEMIC PRESS, AMSTERDAM, NL, vol. 125, no. 2, 27 June 2002 (2002-06-27), pages 215-226, XP008012875 ISSN: 0014-2336 cited in the application tables 5-7</p> <p style="text-align: center;">----- -/-</p>	1-21



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the International filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

27 November 2003

Date of mailing of the international search report

09/12/2003

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>TIGCHELAAR E C ET AL: "GENETIC REGULATION OF TOMATO RIPENING" CSIRO FOOD RESEARCH QUARTERLY, MELBOURNE, AU, vol. 38, no. 1, 1978, pages 22-24, XP008012891 ISSN: 0310-9070 cited in the application table 2</p>	6,7,11
X	<p>MALIS-ARAD S ET AL: "Pectic substances: changes in soft and firm tomato cultivars and in non-ripening mutants." JOURNAL OF HORTICULTURAL SCIENCE, vol. 58, no. 1, 1983, pages 111-116, XP008012898 cited in the application figures; table I</p>	6,7,11
X	<p>HOBSON G E: "Effect of the introduction of non-ripening mutant genes on the composition and enzyme content of tomato fruit." JOURNAL OF THE SCIENCE OF FOOD AND AGRICULTURE, vol. 31, no. 6, 1980, pages 578-584, XP001109551 cited in the application tables 1,2</p>	6,7,11
X	<p>TIGCHELAAR E C ET AL: "Genetic regulation of tomato fruit ripening." HORTSCIENCE 1978 DEP. OF HORT., PURDUE UNIV., W. LAFAYETTE, INDIANA 47907, USA, vol. 13, no. 5, 1978, pages 508-513, XP008012890 cited in the application table 1</p>	6,7,11
X	<p>MUTSCHLER M A: "Ripening and storage characteristics of the Alcobaca ripening mutant in tomato." JOURNAL OF THE AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE 1984, vol. 109, no. 4, 1984, pages 504-507, XP008012889 cited in the application table 11</p>	6,7,11

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>KOPELIOVITCH E ET AL: "Effect of the fruit-ripening mutant genes rin and nor on the flavor of tomato fruit." JOURNAL OF THE AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE 1982, vol. 107, no. 3, 1982, pages 361-364, XP008012897 cited in the application tables 1-4</p>	6,7,11
X	<p>DAVIES K ET AL: "Salt-stress induces partial ripening of the nor tomato mutant but expression of only some ripening-related genes." JOURNAL OF PLANT PHYSIOLOGY 1991, vol. 139, no. 2, 1991, pages 140-145, XP001148153 cited in the application tables 1-4</p>	6,7,11
A	<p>E.KAPELIOVITCH: "The Potential of Ripening Mutants for Extending the Storage Life of the Tomato Fruit" EUPHYTICA., vol. 28, 1979, pages 99-104, XP008013084 KLUWER ACADEMIC PRESS, AMSTERDAM., NL ISSN: 0014-2336 cited in the application table 2 table 3</p>	6-10
A	<p>BUESCHER R W ET AL: "Characteristics of juice, puree and whole tomatoes processed from nor hybrid fruits." JOURNAL OF FOOD SCIENCE DEP. OF HORT. FOOD SCI., UNIV. OF ARKANSAS, FAYETTEVILLE, ARKANSAS 72701, USA, vol. 44, no. 1, 1979, pages 190-192, XP008012884 cited in the application the whole document</p>	6,7,11
A	<p>L.L.PICCININO: "Enhancement of Heterozygous nor and nora Tomato Hybrid Fruit Color by Addition of hp and/or og Genes" HORTSCIENCE, vol. 20, no. 4, 1985, page 657, XP001148133 AMERICAN SOCIETY OF HORTICULTURAL SCIENCE, ALEXANDRIA, VA, US ISSN: 0018-5345 the whole document</p>	6-10

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>MOHR W P: "Effect of differences in degree of ripeness on canned juice quality of high colour vs. normal colour tomatoes: a preliminary assessment." CANADIAN INSTITUTE OF FOOD SCIENCE AND TECHNOLOGY JOURNAL AGRIC. CANADA, RES. BRANCH, SMITHFIELD EXP. FARM, BOX 340, TRENTON, ONTARIO, CANADA, vol. 9, no. 3, 1976, pages 167-170, XP008012886 the whole document</p>	8-11
A	<p>US 5 908 973 A (GALLEGO-VEIGAS PEDRO PABLO ET AL) 1 June 1999 (1999-06-01) column 3, line 6 - line 10 column 6, paragraph 2 - paragraph '0005! column 9, line 59 - column 10, line 15</p>	6,7,11
A	<p>US 5 569 829 A (BONIWELL JEREMY M ET AL) 29 October 1996 (1996-10-29) column 1, line 50 - line 56 column 2, line 4 - line 21 column 7, line 36 - line 50</p>	6,7,11

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Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1-5, 12, 14-21 (all partly searched)
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-5, 12, 14-21 (all partly searched)

Independent claims 1, 12 and 18 (and depending claims 2-5, 14-17, 19-21) relate to tomato products and process defined by reference to a desirable characteristic or property, namely Bostwick value, polygalacturonase and exogalactanase level, 180bp fragment.

The claims cover all products and methods having this characteristic or property, whereas the application provides support within the meaning of Article 84 EPC and/or disclosure within the meaning of Article 83 EPC for only a very limited number of such products and methods. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible.

Independent of the above reasoning, the claims also lack clarity (Article 84 EPC). An attempt is made to define the product and process by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible.

In addition, the claims relate to products and methods defined (inter alia) by reference to the following parameter: Bostwick value, 180bp fragment. The use of these parameters in the present context is considered to lead to a lack of clarity within the meaning of Article 84 EPC. It is impossible to compare the parameters the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible.

Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely (cf. p.3, 1.25-27; p.5, 1.33 to p.6, 1.32; p.7, 1.13-16; p.9, 1.8-20; ex.1; claims 6, 7, 13) those parts relating to processed ripening-inhibited tomatoes being homozygous for the rin, nor, Nr or alc genes, or heterozygous for combinations of two of these genes.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

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Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5908973	A	01-06-1999	AU 687793 B2	05-03-1998
			AU 6262394 A	11-10-1994
			CA 2158473 A1	29-09-1994
			EP 0689594 A1	03-01-1996
			WO 9421794 A1	29-09-1994
			JP 8507923 T	27-08-1996
US 5569829	A	29-10-1996	AU 650241 B2	16-06-1994
			AU 6533890 A	16-05-1991
			CA 2069337 A1	21-04-1991
			EP 0496777 A1	05-08-1992
			WO 9105865 A1	02-05-1991
			JP 5501200 T	11-03-1993
			US 5744364 A	28-04-1998
			US 5254800 A	19-10-1993
			ZA 9008316 A	28-08-1991
			AU 3262293 A	03-08-1993
			WO 9314212 A1	22-07-1993